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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,168	09/10/2003	Joy Sawyer Bloom	AD6929 US NA	3753

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WILMINGTON, DE 19805

EXAMINER

HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 04/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,168

Applicant(s)

BLOOM, JOY SAWYER

Examiner

Sow-Fun Hon

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 and 13 is/are allowed.
- 6) ☐ Claim(s) 7-10 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Withdrawn Rejections

1. The 35 U.S.C. 103(a) rejection of claims 7-10, 12 over Tsutsumi, is withdrawn due to Applicant's amendment canceling claims 1-6, and making claim 7 to be the independent claim upon which claims 8-10, 12 depend.

New Rejections

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 7-10, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsutsumi (US 5,312,866).

Regarding claim 7, Tsutsumi teaches a composition comprising a liquid crystalline polyester (LCP) (polyester resin which is a thermotropic liquid-crystal polymer, column 4, lines 40-50) as a matrix material (50 % by weight of polyester resin, column 3, lines 65-70), having a melting temperature of greater than 399 °C (can form an anisotropic molten phase at a temperature of 420 °C, column 4, lines 42-50), whereby the addition of one or more additives from the group consisting of fluoropolymer (fluororesin, column 3, line 19), graphite and aramid (aromatic polyamide resin, column 3, line 20), remarkably improves the sliding property and dimensional heat stability of the composition (column 3, lines 20-24), and the addition of carbon fibers or

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potassium titanate fibers, remarkable improves the mechanical properties of the composition (column 3, lines 28-35). Said fillers are defined lubricating fillers by Applicant's disclosure (original claim 4). Tsutsumi teaches that the liquid crystalline polyester material has repeat units derived from 4-hydroxybenzoic acid (structural unit formula (V), column 16, lines 40-45), 4,4'-biphenol (structural unit formula (VI), column 16, lines 46-51), terephthalic acid (structural unit formula VII, column 16, lines 52-56) and 2,6-naphthalenedicarboxylic acid (structural unit formula VIII, column 16, lines 57-62) disclosed by Applicant's specification (original claim 3) and that it has an anisotropic molten phase at a temperature of 420 °C (column 4, lines 42-50). A chemical composition and its properties are inseparable. If the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. See MPEP 2112.01. Therefore the composition of Tsutsumi is expected to have a good wear resistance at conditions of at least 1.75 MPa-m/s (50,000 psi-fpm).

Tsutsumi recites a molding resin composition which comprises resins and other additives such as fluororesin, graphite, carbon fibers, aromatic polyamide fibers, potassium titanate fibers and a crystallization accelerator (abstract), wherein said resins comprise a liquid crystalline polyester which has a melting temperature of greater than or equal to 399 °C (can form an anisotropic molten phase at a temperature of 420 °C, abstract). This recitation means that the composition of Tsutsumi can contain at least five lubricating fillers as defined by Applicant's specification, namely the graphite, carbon fibers, potassium titanate fibers, fluororesin and aromatic polyamide

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(fluoropolymer, aramid, page 3, lines 24-27), which is within the claimed range of at least three generic lubricating fillers.

Regarding claim 8, Tsutsumi teaches that the composition can further be blended with other lubricating fillers including mica, molybdenum sulfide, clay, talc, carbon fiber and potassium titanate fiber (column 20, lines 42-50), in addition to the one or more lubricating fillers from the group of fluoropolymer (fluororesin, column 3, line 19), graphite and aramid (aromatic polyamide resin, column 3, line 20), which remarkably improve the sliding property and dimensional heat stability of the composition (column 3, lines 20-24). Independent claim 7 recites three generic lubricating fillers. Dependent claim 8 recites mica as the third lubricating filler, leaving the other two lubricating fillers still generic. Therefore, the mica taught by Tsutsumi qualifies as the third lubricating filler of Applicant's presently claimed composition.

Regarding claims 9-10, Tsutsumi does not teach particulate polyimide, which meets the lower end of the claimed range, 0 % by weight as recited by claim 9, upon which claim 10 depends.

Regarding claim 12, Tsutsumi teaches that an article is made from the composition (column 2, lines 60-70).

Response to Arguments

3. Applicant's arguments against the valid use of Tsutsumi (US 5,312,866) have been fully considered but they are not persuasive.

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4. Applicant argues that it is mere assertion by the Office that the addition of a third filler or the addition of a fourth filter would have been obvious from Tsutsumi's two-filler composition.

Applicant is respectfully apprised that Tsutsumi recites a molding resin composition which comprises resins and other additives such as fluororesin, graphite, carbon fibers, aromatic polyamide fibers, potassium titanate fibers and a crystallization accelerator (abstract), wherein said resins comprise a liquid crystalline polyester which has a melting temperature of greater than or equal to 399 °C (can form an anisotropic molten phase at a temperature of 420 °C, abstract). This recitation means that the composition of Tsutsumi can contain at least five lubricating fillers as defined by Applicant's specification, namely the graphite, carbon fibers, potassium titanate fibers, fluororesin and aromatic polyamide (fluoropolymer, aramid, page 3, lines 24-27), which is within the claimed range of at least three generic lubricating fillers.

5. Applicant argues that the Office would have to back up with evidence the assertion that a three-filler or four-filler composition would have the recited good wear resistance at the stated pressure-velocity conditions.

Applicant is respectfully apprised that Tsutsumi teaches a composition comprising a liquid crystalline polyester (LCP) (polyester resin which is a thermotropic liquid-crystal polymer, column 4, lines 40-50) as a matrix material (50 % by weight of polyester resin, column 3, lines 65-70), having a melting temperature of greater than 399 °C (can form an anisotropic molten phase at a temperature of 420 °C, column 4, lines 42-50), whereby the addition of one or more additives from the group consisting of

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fluoropolymer (fluororesin, column 3, line 19), graphite and aramid (aromatic polyamide resin, column 3, line 20), remarkably improves the sliding property and dimensional heat stability of the composition (column 3, lines 20-24), and the addition of carbon fibers or potassium titanate fibers, remarkably improves the mechanical properties of the composition (column 3, lines 28-35). Said fillers are defined lubricating fillers by Applicant's disclosure (original claim 4). Tsutsumi teaches that the liquid crystalline polyester material has repeat units derived from 4-hydroxybenzoic acid (structural unit formula (V), column 16, lines 40-45), 4,4'-biphenol (structural unit formula (VI), column 16, lines 46-51), terephthalic acid (structural unit formula VII, column 16, lines 52-56) and 2,6-naphthalenedicarboxylic acid (structural unit formula VIII, column 16, lines 57-62) disclosed by Applicant's specification (original claim 3) and that it has an anisotropic molten phase at a temperature of 420 °C (column 4, lines 42-50). A chemical composition and its properties are inseparable. If the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. See MPEP 2112.01. Therefore the composition of Tsutsumi is expected to have a good wear resistance at conditions of at least 1.75 MPa-m/s (50,000 psi-fpm).

6. Applicant argues that the Tsutsumi wear resistance is measured at a pressure-velocity condition of 0.8 MPa-m/s in Example 63, which is less than half of Applicant's condition of at least 1.75 MPa-m/s, and is therefore a much less severe condition. Applicant surmises that in reading the examples 63-76 of Tsutsumi, a skilled artisan could not conclude that a third filler or a fourth filler would substantially improve wear resistance at the recited pressure-velocity conditions.

Applicant is respectfully apprised that the present claims only recite a good wear resistance at the pressure-velocity condition of at least 1.75 MPa-m/s, which is relative when not accompanied by an actual wear resistance value. As discussed above, the composition of Tsutsumi appears to be the same as the one in the present claims. In the absence of clear comparative data, the composition of Tsutsumi is expected to have good wear resistance at the pressure-velocity condition of at least 1.75 MPa-m/s, irrespective of the pressure-velocity condition at which the numerical wear resistance data was collected by Tsutsumi. Furthermore, Tsutsumi does teach that by adding one or more additives from the group consisting of fluoropolymer (fluororesin, column 3, line 19), graphite and aramid (aromatic polyamide resin, column 3, line 20), the sliding property and dimensional heat stability of the composition is remarkably improved (column 3, lines 20-24), and that by adding carbon fibers or potassium titanate fibers, mechanical properties can be remarkably improved (column 3, lines 28-35). Thus Tsutsumi teaches that the addition of a third filler or a fourth filler would substantially improve lubrication (sliding property), dimensional heat stability and mechanical properties, all of which contribute to improving the actual wear resistance of the composition.

7. In response to Applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does

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not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Allowable Subject Matter

8. Claims 11, 13 are allowed. The closest prior art US 5,312,866 or US 5,767,223, even in combination with each other and US 5,969,083, fails to teach or suggest the specific composition which comprises about 65 % by weight of liquid crystalline polyester material having an onset of melting temperature of greater than 320 °C, and contains four fillers wherein said fillers comprise (A) about 10 % by weight of graphite; (B) about 10 % by weight of carbon fiber; (C) about 5 % by weight of mica; and (D) about 10 % by weight of particulate polyimide, wherein the composition has an onset melting temperature of at least 320 °C and wear resistance at conditions of at least 1.75 MPa-m/s (50,000 psi-fpm). Applicant demonstrates that the specific composition recited shows unexpected results in terms of wear resistance performance (Applicant's specification, page 11).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon.
Sow-Fun Hon
04/25/06

[Signature]
HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

4/26/06